

AMENDMENTS TO THE CLAIMS

Claims 1 and 2 (Cancelled).

3. (Currently Amended) A surface acoustic wave element manufacturing method, comprising:

forming a plurality of surface acoustic wave elements, each of the surface acoustic wave elements including a plurality of inter-digital transducer electrodes on a piezoelectric substrate, a grating reflector electrode arranged on each side of the plurality of inter-digital transducer electrodes, and a plurality of pad electrodes led from the inter-digital transducer electrodes and led from the grating reflector electrodes;

forming dicing lines on an outer periphery of each surface acoustic wave element so that the plurality of pad electrodes of each surface acoustic wave element includes a plurality of isolated pad electrodes electrically isolated from the dicing lines, and includes a plurality of adjacent pad electrodes directly adjacent to at least one of the dicing lines;

forming connecting electrodes for electrically connecting the isolated electrodes to a corresponding one of the adjacent pad electrodes;

forming short-circuit electrodes for electrically connecting the adjacent pad electrodes to at least one of the dicing lines;

forming pad reinforcing electrodes on the pad electrodes;

removing at least a portion of each connecting electrode to electrically disconnect each isolated pad electrode from the corresponding one of the adjacent pad electrodes; and

cutting the piezoelectric substrate along the dicing lines;

wherein said removing of at least a portion of each connecting electrode is performed after said forming of the pad reinforcing electrodes.

4. (Original) The surface acoustic wave element manufacturing method of claim 3, further comprising forming bumps on the pad reinforcing electrodes.

5. (Original) The surface acoustic wave element manufacturing method of claim 4, wherein said removing of at least a portion of each connecting electrode is performed after said forming of the bumps.

6. (Original) The surface acoustic wave element manufacturing method of claim 3, wherein said cutting of the piezoelectric substrate comprises dicing the piezoelectric substrate along the dicing lines so that the cut has a width greater than the width of the dicing line.

Claim 7 (Cancelled).

8. (Currently Amended) ~~The surface acoustic wave element manufacturing method of claim 3;~~ A surface acoustic wave element manufacturing method, comprising:

forming a plurality of surface acoustic wave elements, each of the surface acoustic wave elements including a plurality of inter-digital transducer electrodes on a piezoelectric substrate, a grating reflector electrode arranged on each side of the plurality of inter-digital transducer electrodes, and a plurality of pad electrodes led from the inter-digital transducer electrodes and led from the grating reflector electrodes;

forming dicing lines on an outer periphery of each surface acoustic wave element so that the plurality of pad electrodes of each surface acoustic wave element includes a plurality of isolated pad electrodes electrically isolated from the dicing lines, and includes a plurality of adjacent pad electrodes directly adjacent to at least one of the dicing lines;

forming connecting electrodes for electrically connecting the isolated electrodes to a corresponding one of the adjacent pad electrodes;

forming short-circuit electrodes for electrically connecting the adjacent pad electrodes to at least one of the dicing lines;

forming pad reinforcing electrodes on the pad electrodes;

removing at least a portion of each connecting electrode to electrically disconnect each isolated pad electrode from the corresponding one of the adjacent pad electrodes; and

cutting the piezoelectric substrate along the dicing lines;

wherein said removing of at least a portion of each connecting electrode comprises at least one of wet etching and dry etching.

9. (Original) The surface acoustic wave element manufacturing method of claim 3, wherein each connecting electrode comprises a metal film soluble in a developing solution for photoresist; said removing of at least a portion of the connecting electrode comprises:

coating a photoresist on the piezoelectric substrate;
exposing the photoresist so as to make a portion of the photoresist corresponding to at least a portion of each connecting electrode soluble in the developing solution;
developing the photoresist in the developing solution; and
etching the at least a portion of each connecting electrode in the developing solution simultaneously with said developing.

10. (Currently Amended) ~~The surface acoustic wave element manufacturing method of claim 3;~~ A surface acoustic wave element manufacturing method, comprising:

forming a plurality of surface acoustic wave elements, each of the surface acoustic wave elements including a plurality of inter-digital transducer electrodes on a piezoelectric substrate, a grating reflector electrode arranged on each side of the plurality of inter-digital transducer electrodes, and a plurality of pad electrodes led from the inter-digital transducer electrodes and led from the grating reflector electrodes;

forming dicing lines on an outer periphery of each surface acoustic wave element so that the plurality of pad electrodes of each surface acoustic wave element includes a plurality of isolated pad electrodes electrically isolated from the dicing lines, and includes a plurality of adjacent pad electrodes directly adjacent to at least one of the dicing lines;

forming connecting electrodes for electrically connecting the isolated electrodes to a corresponding one of the adjacent pad electrodes;

forming short-circuit electrodes for electrically connecting the adjacent pad electrodes to at least one of the dicing lines;

forming pad reinforcing electrodes on the pad electrodes;

removing at least a portion of each connecting electrode to electrically disconnect each isolated pad electrode from the corresponding one of the adjacent pad electrodes; and

cutting the piezoelectric substrate along the dicing lines;

wherein said removing of at least a portion of each connecting electrode includes simultaneously etching at least a portion of each short-circuit electrode to electrically disconnect each adjacent pad electrode from the dicing lines.

11. (Original) The surface acoustic wave element manufacturing method of claim 3, further comprising etching at least a portion of each of the short-circuit electrodes so as to electrically disconnect each adjacent pad electrode from the dicing lines, wherein a process for performing said removing of at least a portion of each connecting electrode is identical to a process for performing said etching of at least a portion of each short-circuit electrode.

Claim 12 (Cancelled).